

MISSOURI resources

Winter 2007 • Volume 24 • Number 1



Director's Comment

With the holidays over and the start of another year already in full swing, I've had a few minutes to look back over this last year at the Missouri Department of Natural Resources. It seems like only yesterday that I accepted Gov. Blunt's offer to direct this agency – and yet it's been two full years. Frankly, the job has been more of a challenge than I expected in some ways, but much more rewarding, as well. Protecting Missouri's environment is a complex and time-consuming job – not just for me – but for the dedicated people who believe that clean water, clean air, and productive and unpolluted land resources are worth dedicating a career to.

When Missouri voters, once again, approved the one-tenth-of-one-percent parks and soils sales tax last August, you affirmed your belief that we are managing the 83 state parks and historic sites, and Roger Pryor Backcountry, in an accountable manner. Seventy-five percent of the funding for our state parks operations comes from this fee. The soils portion of the tax funds the educational programs and soil conservation practices that support Missouri's 114 soil and water conservation districts. Your approval of the parks-and-soils sales tax has allowed us to focus on making new inroads where you felt we needed it most.

In the last two years, we have directed a lot of our departmental resources and efforts toward efficiency and accessibility. By adding additional satellite offices, we are now able to get more face time with our constituents. We rarely have to drive for hours to an on-site visit anymore. Our ombudsman program just celebrated its first year in operation. I am proud to say that 2,145 citizens, community leaders and business owners have been directly contacted by one of our seven ombudsmen. As appropriate, many of these contacts



have resulted in immediate referrals to a regional director or me.

We also began a series of town meetings starting in late 2005. To date, we've been to 73 cities and met with more than 1,000 citizens. For many Missourians, improvement at this agency meant faster access to people who could put you in contact with the right

staff person to help with your question, environmental concern or help you complete a permit.

And, speaking of permits, we are working hard to bring more of that information online. Our "how-to" environmental permit and inspection manuals help save you time and money. At [www.dnr.mo/forms/], the department has also made permit, license, registration and certification forms available in several word processing formats. These simpler online forms can also be updated for future use.

Environmental permits cost very little when you consider the economic benefit they provide. In fact, they are an absolute bargain compared with the remedial work and health care that might be needed without them.

The economic value of permits is clear, as well. For example, while it may take several years to obtain a permit for a landfill, the permit is good for the life of the landfill and adds considerable value to the property. The number and types of permits we handle is lengthy, but the value of each is the same — protecting our water, air and land resources for all Missourians.

I have appreciated serving you these first two years, and hope that you have a happy, healthy and prosperous 2007.

Doyle Childers

Doyle Childers
Missouri Department of Natural Resources

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Putting Missouri’s Underground to Work

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by Chris Cady

Thirty years ago, hazardous site cleanups seemed to take forever. Thanks to the faster MRBCA process, cleanups can be tailored to future intended use. Now site owners can put these areas back to work without spending years in the courtroom.

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Above right: The opening of trout season in Missouri is less than two months away.

Above: Winter maintains its icy grip on this desolate rural road in Saline County.

FRONT COVER: A rising winter moon shines through the branches of a burr oak in Boone County.

BACK COVER: Up to 16 inches of snow blanketed parts of Missouri in the season’s first winter storm.

Cover photos by Scott Myers.



Environmental Emergen is on the Scene 24/7

by Kerry Cordray
DNR file photographs

Jefferson City, May 30, 2003 –

On a typical Friday morning at 7:45 a.m., the 24/7 hotline in the incident command center warbled quietly on the desk.

The day's duty officer answered and calmly took down the details. In the Mississippi County community of East Prairie, gasoline had been discovered leaking beneath a filling station's pumps. Two months earlier a vehicle had banged a pump. The damage was repaired, but lines hadn't been tested before the pump went back in service. After giving a few instructions, the operator hung up and dialed a number at the department's Southeast Regional Office in Poplar Bluff. One of the signature "blue trucks" of the department's Environmental Emergency Response team was soon on the way.

Upon arrival, On-Scene Coordinators Jackson Bostic and Randy Carter

coordinated with local authorities and the Missouri Department of Agriculture. An inventory of an aboveground tank at the station came up thousands of gallons short. It was estimated more than 15,000 gallons might have leaked into the ground around the station. Bostic and Carter made sure the area was safe for work and began the first day of what was to become more than a three-year and \$300,000 cleanup process.

BASED THROUGHOUT THE STATE

The names, places and details change, but variations on this scene repeat themselves every day. On average, each year the EER 24/7 "spill line" takes more than 1,500 calls and responds to nearly 450 hazardous substance emergencies. On incidents requiring an immediate staff response, the blue trucks roll out nearly every

day from Kansas City, Jefferson City, Macon, Poplar Bluff, St. Louis and Springfield. On calls where an immediate physical response isn't needed, hotline staff gather information and advise hazardous material technicians, local fire and police departments, responsible parties and concerned citizens about appropriate protective actions. Historically, about 50 percent of incidents reported involve some type of petroleum release.

The severity of incidents ranges from frequent spills of fuel tanks from wrecked vehicles to the call that came early the morning of Dec. 14, 2005, announcing the catastrophic 1.3-billion gallon breach of the Taum Sauk reservoir and the resulting destruction of Johnson's Shut-Ins State Park. Between those extremes, calls concern a wide variety of hazardous material spills and other environmental problems – truck and train accidents,



DNR file photos

cy Response Team



(Opposite page, top) EER staff investigate drums of hazardous waste dumped on National Forest property.

(Above center) A contractor was hired in March 2005 to control a fire affecting 1.2 million scrap tires near Fair Play in Polk County. An excavator was used to expose the fire.

(Above) In August 2003, cleanup crews are decontaminated after dealing with a leak from a tanker truck that was delivering hydrochloric acid to a manufacturing firm in Sedalia, Pettis County.

(Left) Emergency response vehicles carry EER teams from the department's regional offices to environmental emergencies across Missouri.

wastewater discharges, industrial spills and illegally dumped containers. “Our mission has historically revolved around managing emergencies related to hazardous materials, but as additional needs have arisen, our role has expanded,” said EER section chief, Brian Allen. “Beyond the traditional issues, our work also involves Homeland Security, local, state, and federal emergency planning, and coordinating department response to disasters.”

Exeter, October 14, 2005 –

When on-scene coordinators Doug Thompson and Wendell Hall arrived at the Eski-Mo Packing poultry processing plant in the southwest Missouri town of Exeter, the stench was so overpowering the local school kept children indoors for recess. Swarms of flies buzzed throughout the town. An estimated 250,000 pounds of

chicken had rotted for more than four months in a broken down walk-in freezer while the plant’s owner and an insurance company disagreed over the cause of the failure and who should pay for the cleanup.

After meeting with the owner and the mayor, Thompson and Hall donned protective equipment and respirators to enter the facility. Bacteria dying in the liquefying meat produced ammonia vapor levels twice as high as anyone should breathe. “The environment inside was so toxic, even the flies were dying,” Thompson recalled.

Acting on the team’s report, the department issued a hazardous substance emergency declaration, requiring the owner to clean up the site. Twenty-four hours and five tractor-trailer loads of putrid chicken later, EER staff had overseen the moving of the whole mess to a nearby landfill.



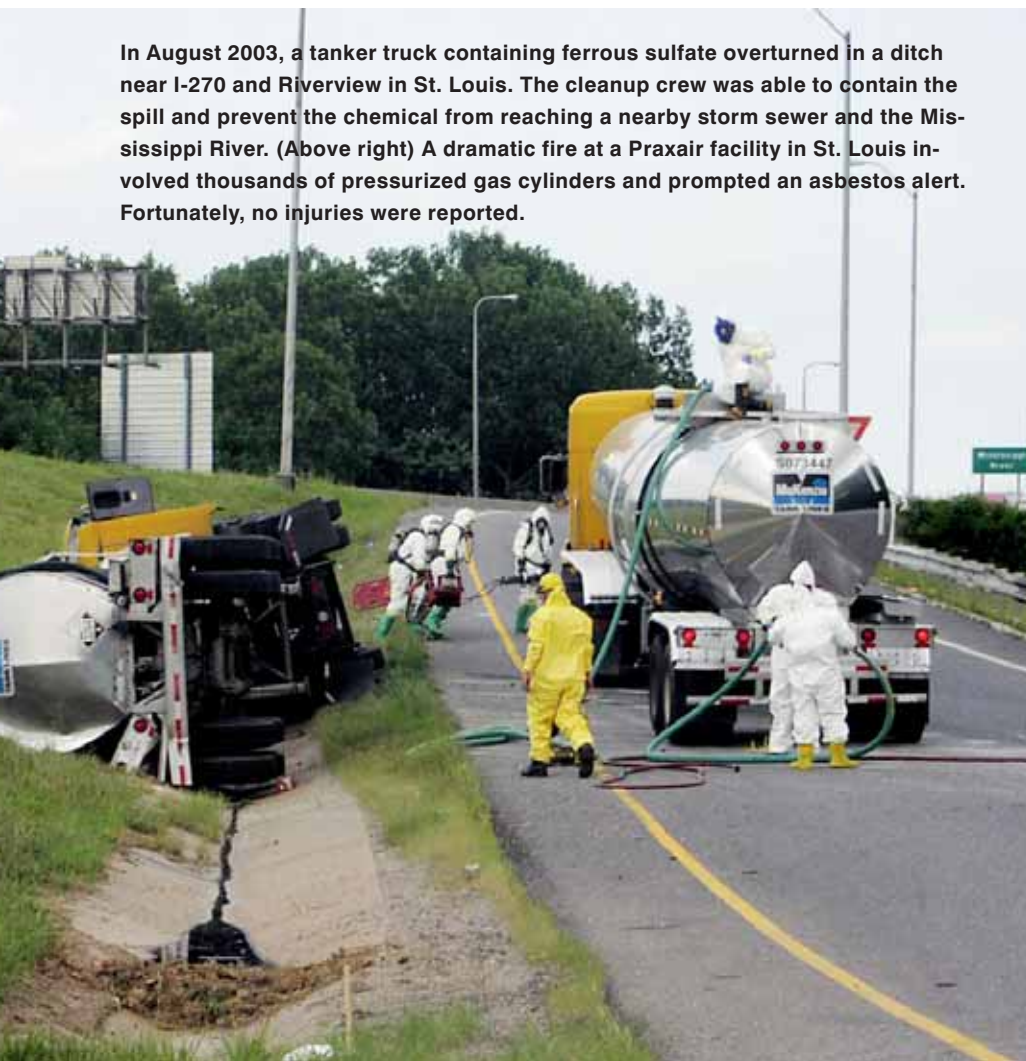
PROUD HISTORY

The department began responding to chemical and petroleum spills in the mid-1970s. Responses back then, directed mainly at petroleum releases affecting waterways, were made through the department’s Water Pollution Control Program. By the late-1970s, the department was also being called about incidents related to air pollution, solid waste and hazardous waste. The Environmental Services Program (formerly the Laboratory Services Program) took on the role of staffing and responding to spills for the department.

In 1983, hazardous waste management legislation referred to as the “Spill Bill” gave the program authority to operate a hotline, initiate cleanups and provide cleanup oversight for chemical releases. “The Spill Bill is the backbone of our authority to provide emergency assistance,” said Alan Reinkemeyer, who directed the EER section from 2000 to 2006 and is now director of the Environmental Services Program. In 1995 responders were based in each of the department’s regions to enhance response times and provide support to local emergency agencies.

In 1997, responding to a growing crisis of methamphetamine incidents and seizures, the EER team created a unit to deal with hazardous waste issues related to meth labs. Chemicals and debris associated with meth production created special challenges for law enforcement agencies. “To work on those problems the department helped form the Missouri Methamphetamine Enforcement and Environmental Protection Task Force,” said Brad Harris, chief of the EER Meth/Special Projects unit. “The partnership has since become a national model for protecting

In August 2003, a tanker truck containing ferrous sulfate overturned in a ditch near I-270 and Riverview in St. Louis. The cleanup crew was able to contain the spill and prevent the chemical from reaching a nearby storm sewer and the Mississippi River. (Above right) A dramatic fire at a Praxair facility in St. Louis involved thousands of pressurized gas cylinders and prompted an asbestos alert. Fortunately, no injuries were reported.



“Underneath all the science and technology, the most important thing we do is pretty simple – people need our help, they call, and we go.”

law enforcement and the environment.” The unit provides training and specialized equipment at no cost to law enforcement, and coordinates the Clandestine Drug Lab Collection Station program, providing technical and financial assistance to local fire and law enforcement agencies operating 20 collection stations statewide.

St. Louis, June 24, 2005 –

The fire at Praxair’s gas distribution plant on Chouteau Avenue started about 3:15 p.m. on a flatbed truck loaded with tanks of the welding gas acetylene. An alert employee sounded the alarm and workers quickly followed emergency plans and cleared the facility. Within moments, rapid-fire explosions shook the area. Spectacular fireballs sailed skyward. Flaming fragments of gas cylinders flew blocks away into the Lafayette Square neighborhood. Firefighters and police evacuated a wide area around the plant and stopped traffic on Highway 40. Hours later, with the scene under control, authorities were amazed no serious injuries had been reported.

But the next day, EER on-scene coordinator John Whitaker learned that filler materials in some of the acetylene cylinders held an asbestos-containing compound. The blasts had spread an unknown amount of the material over the area with the cylinder fragments. “Our initial concerns were the release of gases and containing contaminated runoff from fire fighting,” recalls Whitaker. “But when we heard about the asbestos, I knew we were in for a much longer cleanup.”

Over the next several days EER staff oversaw investigations by Praxair and hazmat contractors, supervising collection and testing of outdoor air and surface materials. Asbestos amounts didn’t exceed thresholds for

health concerns, but a cleanup of area rooftops, roads and parking lots was launched that would continue until late October, 2005.

SOLID SCIENCE

In addition to being summoned in emergencies, EER staff and their specialized equipment are increasingly called upon to journey statewide to gather samples and detect problems at waterways, illegal dumps and hazardous waste sites. Skilled workers operate instruments like ground penetrating radar, a robotic camera system and portable gas chromatographs to locate and identify all kinds of suspected or potential chemical hazards. Beginning in 1995, the department acquired hydraulic soil probes – equipment resembling small drill rigs – designed to conduct subsurface investigations of soil and water at depths up to 100 feet.

Using such advanced field equipment extends and complements chemical analysis performed in the state’s Environmental Laboratory, a facility in Jefferson City also operated by the Environmental Services Program. Most EER field-sampling work must be backed up by more detailed testing possible only in a controlled laboratory environment.

Kennett, September 22, 2006 –

The week this story is filed, an EER team from Jefferson City heads to the Bootheel community of Kennett to study groundwater near its drinking water wells. Traces of a gasoline additive, methyl tertiary butyl ether (MTBE), were discovered in the



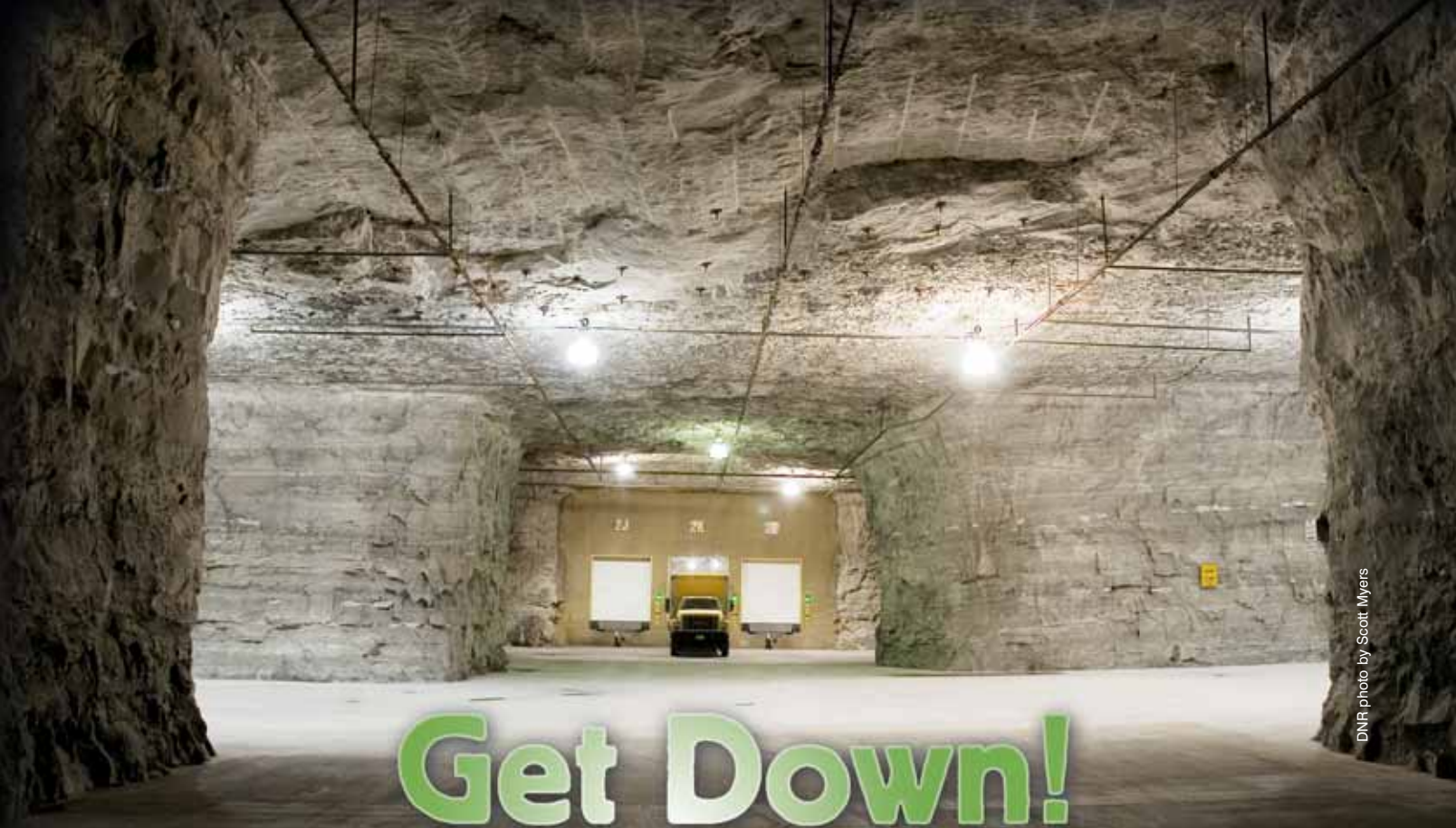
After a 1990 pipeline break near Ethel in Macon County, EER cleanup crews contained and removed light crude oil from the Chariton River.

town’s drinking water during routine monitoring by the city. Rapid follow-up testing has shown only one of the city’s four wells to be affected, and the city quickly took it offline. No contaminated water will be consumed.

No federal guideline exists for how much MTBE may be allowed in drinking water, but tiny measured amounts ranging from eight to 24 parts per billion are enough to make local officials cautious. Kennett citizens and city leaders gladly welcome the EER team as it arrives on site to investigate the source of the MTBE.

“That’s a really satisfying aspect of this job,” said Brian Allen. “Underneath all the science and technology, the most important thing we do is pretty simple – people need our help, they call, and we go.” 🌅

Kerry Cordray is division information officer for the department’s Field Services Division.



DNR photo by Scott Myers

Get Down!

Putting Missouri's Underground to Work

by Kathy Deters and Jim Vandike

While Captain Kirk once speculated that space was the final frontier, Missourians are proving that the world beneath our feet is worth exploring as well. Though underground living may conjure images of dank, dark spaces more fit for a mole than a business, some entrepreneurs are proving that the subterranean lifestyle offers significant advantages.

Missouri's land has been mined for centuries. According to Art Hebrank, site administrator at Missouri

Mines State Historic Site, Native Americans were the first to mine here, looking for clay and flint and even constructing an underground mine in Franklin County. In the 1720s, European settlers began commercial lead mining. As construction grew, so did the need for stone, quickly outpacing the mining of most other materials.

Hebrank points out that while stone may not be as glamorous as silver or gold, it is the bread and butter of many Missouri businesses. "The thing that's most im-



Hunt Midwest photo

portant economically is crushed stone and stone aggregate,” Hebrank said.

Geologic conditions were favorable for underground quarries, which enabled operators to extract rock from thick, almost horizontal layers of bedrock. When the quarrying was complete, underground space remained, which some progressive quarry operators soon identified as a second source of profit.

They began to evaluate underground quarries and their potential for reuse. Soon this process evolved, and many quarry operators were mining with the dual intent of using the remaining space for businesses.

Recycling Missouri’s underground space is certainly not a new concept. The Department of Natural Resources recognized its value about 25 years ago when the Division of Geology and Land Survey published *Underground Space Resources in Missouri*. Geologist John W. (Bill) Whitfield (now retired) visited more than 100 underground quarries. Several were still operating and some of the owners intended to develop the space after mining was completed. Some had already been developed for further use but many others had simply been abandoned after mining ceased. Whitfield found that many factors led to the successful reuse of the underground space including roof thickness, physical condition of the rock, floor condition, pillar condition, drainage, water table position and proximity to transportation corridors.

Quarry owners and operators who planned ahead for the reuse of this underground space as it was being mined were able to create safer, better-constructed facilities. They could leave a little more rock behind for ceilings, for example, or more support pillars. Though they might mine a little less material, the result was space that could be used for a variety of purposes.

“In many cases, they [quarry owners] actually make more money on the space afterward than they do on the rock,” Hebrank said.

Underground facilities that are constructed in these leftover spaces are typically cheaper to build than their surface counterparts, which translates into cheaper lease rates for tenants. They also stay a mild 60 degrees all year, meaning lower utility bills for owners and tenants.

Bussen Underground Warehouse, a former limestone mine that was engineered

and mined to create a climate-controlled warehouse, boasts, “Your company can move up, by moving down to Bussen Underground.” Located in south St. Louis County, Bussen’s tenants include Custom Midwest Corp, a graphic design company; Inplant Offices, which manufactures pre-finished buildings and walls; Signature Wines; United Fulfillment Company; Sensient Flavors; and Kuna Food Service. Bussen also is in the process of building a 105,000-square-foot underground warehouse for Unigroup Inc.

In mid-Missouri, many businesses are moving their warehouses down to Subtera Underground Warehousing. Located on Stadium Boulevard in Columbia, Subtera also offers a convenient location, just one mile north of I-70. This business complex, which was produced by the mining of a massive formation of Burlington Limestone, offers 1.3 million square feet of leasable space.

(Opposite page, top) Subtera Underground Warehousing is located one mile north of I-70 in Columbia, Mo.

(Opposite page, bottom) SubTropolis, in Kansas City, Mo., is reportedly the world’s largest underground business complex.

(Below) The office space for Underground Records Management is part of Subtera Underground Warehousing.



DNR photo by Scott Myers



Hunt Midwest photos

(Top) Paved, climate-controlled storage is a benefit of SubTropolis, Kansas City.
(Above) Even the largest trucks navigate the many miles of paved streets in SubTropolis.

Kansas City boasts the world's largest underground business complex. Though it might sound like a superhero's underground lair, in fact, Hunt Midwest SubTropolis houses more than 50 local, national and international businesses.

Created through the mining of a 270-million-year-old limestone deposit, the facility is projected to have 50 million square feet of space when fully developed. SubTropolis offers space for warehouse, distribution and light manufacturing. Buildings for lease range from 10,000 to 500,000 square feet.

According to Tim Basler, manager of sales and leasing for the complex, like many underground facilities, SubTropolis offers some important benefits for businesses. Humidity levels are controlled, and because SubTropolis is underground, its buildings and many miles of paved streets are free from exposure to outdoor elements and inclement weather, which also reduces insurance and security costs. Thanks to mild

year-round temperatures, utility costs are up to 75 percent less than a traditional business complex and the work space is more comfortable for employees.

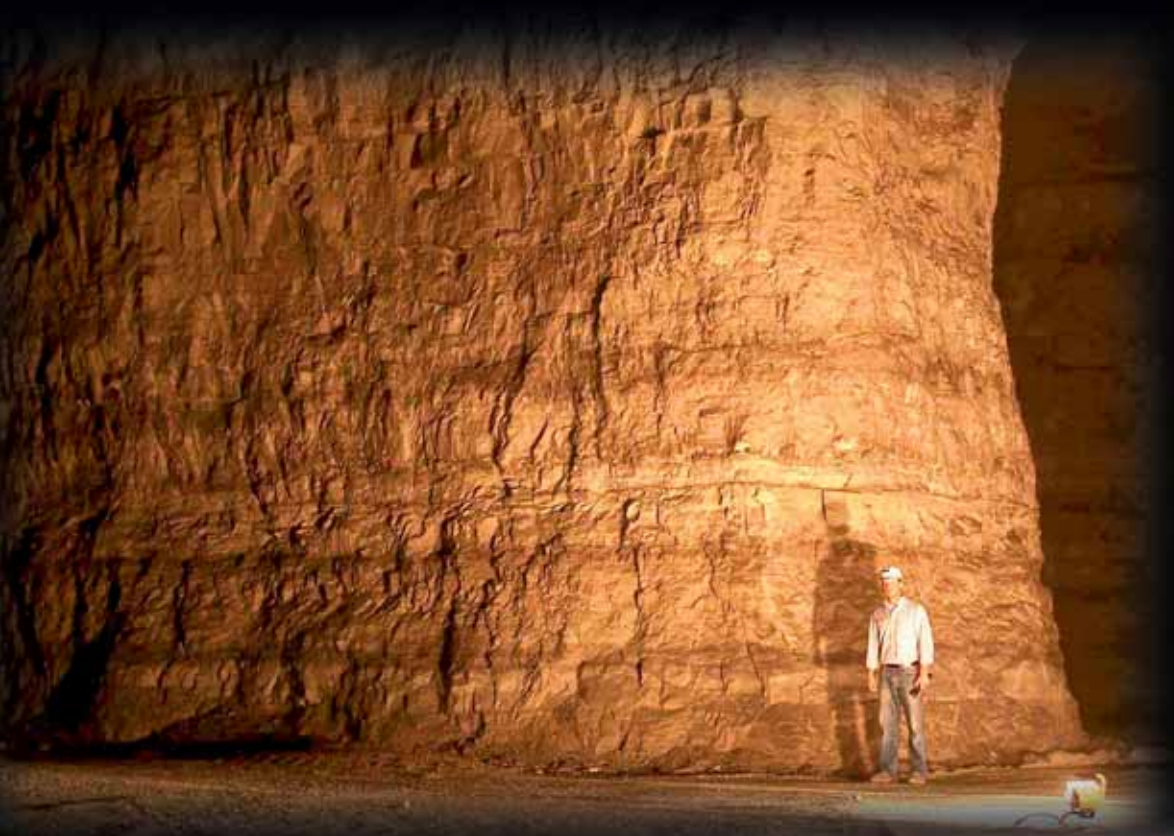
Underground space development is, essentially, space recycling. If the location and geology are suitable for underground development, then the rock can be removed in such a way that the space left behind can be easily developed and used. As long as the mining is done correctly, even the surface space above the underground development can be used.

SubTropolis is located near the intersection of I-435 and Hwy. 210 across from Ameristar Casino in Kansas City. Those familiar with the area may recognize that as the site of another landmark: the Worlds of Fun and Oceans of Fun amusement parks. In fact, many area residents will be surprised to know that much of SubTropolis is located *under* these amusement parks.

Underground construction allows businesses to be built near major metropolitan centers, highways and shipping hubs, even if the surface properties already have been developed. This is a considerable advantage when considering start-up infrastructure costs. They also avoid obstructing views of local scenery or historic architecture.

Hunt Midwest develops the surface property above SubTropolis for industrial users and sells the space to customers, but retains ownership of everything below ground, allowing them to continue mining and to develop underground industrial buildings.

"There are many trucking operations, manufacturing companies, hotels, and other uses above us including the two amusement



(Left) Some support pillars in “The Mountain” at Branson are massive – 30 feet across and four times thicker than required by law. Mountain Data Center LLC is located in a still-active dolomite-limestone mine inside a mountain near Branson. Located 100 feet higher than the Table Rock Lake dam, The Mountain has served as a secure storage facility for business records and valuables for years.

parks,” Basler said. This is a considerable advantage when considering start-up costs.

Though constructing an entire business complex underground might sound like an undertaking similar in scope to the Pyramids, Basler said in reality, it’s often simpler than a traditional surface structure.

“It is actually easier to build a facility in the underground because the shell structure is already in place,” Basler said. “We simply pour a concrete floor, hang lights and sprinklers, build some block walls with dock doors, and finish out the office. It is really a fast process.”

The greatest obstacle is not the construction or even the maintenance of such a facility, but rather the stereotypes that accompany it.

“Perception is our biggest challenge,” Basler said. “People commonly refer to us as ‘the caves,’ though we wish they wouldn’t. When people hear the term caves they automatically think of bats, stalagmites, etc. That is simply not the case in SubTropolis. We are much closer to an industrial park than we are to Fantastic Caverns in southwest Missouri.”

Though business complexes handling shipping, storage, assembly and other industrial needs are now a popular use of underground space, underground constructions are by no means limited to these uses.



Gail L. Hinshaw photos

In Missouri, a variety of businesses have found their way underground over the years, such as the tennis courts and underground railroad facilities at Carthage Underground Storage; a boat repair and storage facility at Sharp Marina near the Lake of the Ozarks; and even Caveland Roller Rink, a popular spot in Festus in the 1970s. In fact, the only limit to the use of underground development projects may be one’s own imagination. 🌅

Kathy Deters is a public information coordinator for the department. Jim Vandike is a groundwater section chief at the Water Resources Center in Rolla.

(Above) The Mountain recently added a Tier-Four data center with independent power. Art objects and even artifacts from the Titanic are stored here by both small businesses and large corporations. The Mountain has nine water wells on-site, as well as its own wastewater treatment facility. Vehicles are all electric to maintain air quality.

Meet Rebecca

Cleanups Based on Environmental Risk

by Chris Cady
photographs by Scott Myers

In summer 2006, the Missouri Department of Natural Resources finalized the Missouri Risk-Based Corrective Action (MRBCA) Process, (pronounced “M-Rebecca” by its users) to streamline the remediation of sites contaminated by hazardous substances. The new system will help focus finite resources on sites with the highest risks by tailoring cleanup of each site to a level appropriate for the property owner’s intended future use of the land.

Who is this Rebecca, Anyway?

Throughout the ‘60s and ‘70s, environmental pollution got a lot of attention, and a groundswell of support emerged for environmental regulation. The Resource Conservation and Recovery Act, and Comprehensive Environmental Response, Compensation and Liability Act (Superfund) laid out requirements for hazardous



site remediation. By the early '80s, with Love Canal and Times Beach in the news, the pendulum swung toward very stringent standards. With multiple regulations in place, the decision-making process for hazardous substance cleanup was fragmented and inconsistent.

If you owned a contaminated site, your choices for cleanup were:

- Clean up to a zero concentration of the contaminants. It sounds great, a pristine site, free of pollution. But any environmental scientist will tell you that is impossible to do and impossible to verify. No lab instrument in the world can demonstrate "zero" concentration.
- Clean up to the limits of detectability. This was done many times in the past and still occurs. But it has no direct connection to safety and health of the environment or humans. Why should the limitations of a lab instrument determine what is safe?
- Perform a very complicated and expensive "site-specific risk assessment" to determine safe levels. History has shown that many responsible parties would rather argue in court than open their wallets and begin spending money on such a project. The burning question was why clean something up if it isn't actually a safety risk? How could the risk level be assessed more easily?



(Above bottom) The burned-out hulk that had been the Sunshine Biscuit bakery and the nearby Zea Chemical Building in Kansas City won the Phoenix Award in 2000 after the Planned Industrial Expansion Authority acquired the property and began redevelopment of the Lewis and Clark Redevelopment Area (Top).



(Opposite page) The 24-story, art deco Continental Life Building was a prestigious office building in St. Louis from the 1930s to the mid-1950s. Renovation began 25 years after the last tenant left in 1974. (Below left to right) The exterior walls and windows were repaired and painted. New fixtures, window treatments and artwork replaced interior decay.

A lot of time and effort were spent nationally in the process of developing new policies in response to this problem. In the '90s, state-sponsored insurance funds responsible for cleaning up gas station storage tank leaks – by far the most common type of polluted site – were going broke paying for massive soil removals. Regulators and the regulated community alike were unsure that such a level of cleanup was necessary.

Other properties where cleanup was not required by regulation, or where regulators weren't even aware of the contamination, simply sat idle. Their owners knew, or feared, that cleanup costs would drain their wallets and could even exceed the value of the property. By 1995, the federal government estimated that so-called “brown-

fields” – properties where reuse was complicated due to known or suspected contamination – numbered as many as half a million nationwide.

An alternative began to emerge: cleaning up to a level safe for human health and the environment based on both science and the planned future use of the property, using a simplified but safe decision-making process. Thus was born the concept of risk-based site remediation.

Rebecca is Born

In 1999, the Missouri General Assembly passed Senate Bill 334, a simple bill requiring the department to establish cleanup standards for groundwater based on actual risk.

Until that point, many areas with contaminated groundwater, called plumes, were always cleaned to meet drinking water standards. The new law forced the question, “Was the water being used, or was it a suitable source that could be used?” There were exceptions in the bill, so that natural springs and other outstanding waters were always protected, but most sites could now be considered on their own merits.

The first stab at a rule draft, written solely by the Department of Natural Resources after input from industry, was not satisfactory to any of the affected parties.

In a key move that would influence policy for years to come, the Missouri Clean Water Commission, in 2002, directed the department to engage in a more collaborative process with stakeholders to write the rules.

The challenge was to create a streamlined, technically defensible process to address a broad range of contaminated sites in Missouri. The new overarching process needed to be both flexible and predictable, as well as being applicable to all types of contaminated sites, regardless of the state or federal governing statutes for cleanup.

What started as an effort to make it easier to reach safe closure on sites with contaminated groundwater became an all-encompassing system, covering soil and groundwater contamination on all types of sites with one set of unified risk-based cleanup standards.

The comprehensive nature of the MRBCA guidance document, and its inherent flexibility and predictability are expected to result in more and faster cleanups, especially in the department's Brownfields/Voluntary Clean-Up Program (BVCP). “MRBCA is a sound platform upon which common sense and science can come together for the mutual benefit of the environment and the economy,” said Natural Resources Director Doyle Childers.

Evolving Standards

Environmental science in the modern age is a moving target. While some standards have become less stringent over time, others have been added dur-

(Right) The seven-story Merchandise Mart, on Washington Avenue, St. Louis, began its career in 1888-89 as a tobacco company office building. It obtained its name in the 1940s and 1950s as home to a dry goods and wholesale business. (Below) It became vacant in 1984, but a restoration plan for the building was approved in 2001. It is listed on the National Registry of Historic Places.





(Far left) Department of Natural Resources Director Doyle Childers talks with Larry Sharp of Whitmire Research Laboratories. Also pictured, from left, Sungmi Kim, environmental consultant for Whitmire, Scott Totten, chief ombudsman for the department and Atul Salhotra (far right), environmental consultant for Whitmire.

(Left) Monitoring wells dot the parking lot at Whitmire Research Laboratories where solvent contamination from the 1970s was detected during an environmental risk assessment of the property.

ing the last decade. The migration of vapors from soil or groundwater into buildings through cracks in the foundation – so-called “vapor intrusion” – has recently become recognized as a new pathway of concern. When sandy or gravelly soils are contaminated with volatile substances such as solvents, low levels of vapors seeping into buildings can pose a long-term risk to the occupants.

For the first time, this exposure pathway was incorporated into Missouri’s cleanup guidance with MRBCA.

Rich Nussbaum, unit chief with the RCRA permits section, said, “There are going to be various issues that come to light, and we’ll be seeking solutions both internally and externally. It’s a living document.”

While standards may change as time goes on, MRBCA’s goal is to make sure no site is cleaned up less than it needs to be. The guidance can be updated as new science emerges for the benefit of all.

For a project manager, any site plan has to pass the common sense test. Is this complicated machine – and that’s what it is, a calculating machine – giving a result that is protective, defensible and sustainable in the long term?

“There is so much flexibility and so many possible outcomes for a given site, that the process has to be used prudently,” said consultant Keith Piontek, a member of the MRBCA stakeholder group. That’s why the final decisions are always in the hands of people.

Long-Term Stewardship: An Ongoing Experiment

One issue being closely watched is long-term stewardship (LTS) of those sites that are not cleaned up to unrestricted use standards. If a site is not clean enough for residential use, or the groundwater is judged unsuitable for drinking water, some mechanism must be put in place to ensure that requirement is met as long as the contamination still poses a risk. And, that information has to get into the right people’s hands at the right time. MRBCA refers to these as “Activity and Use Limitations.”

Currently, the department relies heavily on restrictive covenants placed in the property chain of title to achieve this, but there is no uniform, consistent approach to LTS among the various remediation programs, nor a guarantee that covenants will be observed.

How do you make sure a sewer maintenance crew doesn’t dig into a capped area and expose itself to contaminated soil? New ideas are being considered. Utility companies prevent damage to their underground facilities by utilizing One-Call systems to inform excavators about the location of underground utility lines. Entering cleanup sites that contain residual contamination or specialized underground facilities into those systems could expand protection.

An ongoing research and development project using expert consultants is determining new ways to serve up

site information over the web to local agencies such as planning and zoning and building permitting offices.

“There are questions here. Will this system be effective in the long term, and how will it be paid for? It’s a grand experiment,” said Jim Belcher, the department’s BVCP chief. Staff is closely watching other state LTS programs and notable LTS failures in the news.

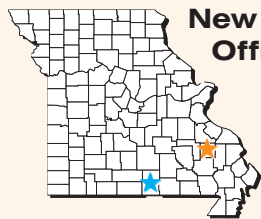
“We’ve had incidents in Missouri, but we haven’t had any serious breaches resulting in exposures. We dissect the failures that happen in other states to help design our systems, because we don’t want to be those guys,” Belcher added.

So Far, So Good

More than 50 brownfield sites and over 300 petroleum storage tank sites have already been remediated and closed out under the new system. The process is also being implemented for some Superfund and RCRA-permitted sites. It’s estimated there are thousands of potentially contaminated sites in the state. With these kinds of numbers, it’s never too early to streamline the cleanup process.

For more information on the Missouri Risk-Based Corrective Action (MRBCA) process, visit the MRBCA page at [www.dnr.mo.gov/env/hwp/mrbca/mrbca.htm] or the Brownfields page at [www.missouribrownfields.com]. ☀

Chris Cady, Ph.D., is an environmental specialist with the Hazardous Waste Program’s Brownfields/Voluntary Cleanup section.



New Satellite Offices Open

The Missouri Department of Natural Resources held open houses in

Dec. 2006 satellite offices in Willow Springs and Fredericktown.

The department's satellite offices in Willow Springs and Fredericktown will complement and extend the environmental services provided to the region by the department's Southeast Regional Office at Poplar Bluff. Other offices opened to serve the southeast region during the last year include locations in Rolla and Portageville.

The Howell County Satellite Office holds one environmental specialist for drinking water and wastewater issues. The Madison County Satellite Office will be staffed by two environmental specialists dealing with drinking water, wastewater, air pollution, solid waste and hazardous waste issues. Both offices will also provide nearby counties with facility inspections and compliance assistance services.

In the last year the department has also opened satellite offices in Carthage, Maryville, Portageville, Rolla and Warsaw. The satellite offices are the newest part of the department's Field Services Division, which oversees the agency's five regional offices, 13 additional satellite offices, Environmental Services Program and other key field activities. For a map of the department's regional and satellite offices, visit the department's Web page at [www.dnr.mo.gov/regions/regions.htm].

The Howell County Satellite Office is located at 906 Springfield Road in Willow Springs; phone (417) 469-0025. The new Madison County office is at 120 West Main in Fredericktown; phone: (573) 783-2385.

Department Improves Permit Access

Missouri businesses, communities and citizens may



need 2,444 land disturbance and 1,074 sewer extension permits annually. Until recently, understanding and filling out the paperwork was quite a chore.

"In the past, people had to fill out applications and registrations by hand or on a typewriter, and you may have needed to visit one of our offices to get help to complete them," said Doyle Childers, director of the department. "Now, about 70 percent of those can be completed on your computer."

When customers are done filling out a form, they can print, sign and mail it to the Department of Natural Resources. The department also is working toward being able to accept electronic submission of these as well as accepting electronic payments.

The department issues nearly 30,000 permits each year to protect the state's natural resources. There are more than 150 types of permits used by facilities, communities and citizens to do business in Missouri. The department is focusing its efforts on the 25 permits that account for about 80 percent of the state's environmental permit traffic.

Businesses, communities and citizens can check the department's Web site regularly at [www.dnr.mo.gov/forms/] for updated information and forms as they become available.

This is another component in the department's larger, ongoing effort to simplify the way it does business.

Whitmire Micro-Gen MRBCA Cleanup



Missouri Department of Natural Resources Director Doyle

Childers recently unveiled new cleanup guidance, known as

Missouri's Risk-Based Corrective Action, at Whitmire Micro-Gen Research Laboratories located in Valley Park.

MRBCA can be used to better manage possibly contaminated properties such as manufacturing, industrial or commercial sites. Whitmire Micro-Gen Research Laboratories is one of the first

companies in the nation to use the new cleanup guidance process.

"The new process will give property owners more flexibility and make cleanups potentially cheaper, thus allowing more contaminated sites in Missouri to be cleaned up and become safer for the public health and the environment," Childers said.

The use of the MRBCA enabled Whitmire to obtain a Letter of Completion from the department's Brownfields/Voluntary Cleanup Program. The department's cleanup certification declared the site safe for non-residential use and provided documentation required for the sale of the property to another owner.

For additional information about MRBCA, please visit the department's Web site at [www.dnr.mo.gov/env/hwp/mrbca/mrbca.htm].

An article on the MRBCA program appears on pages 10-13 in this issue of *Missouri Resources*.

AASG DGSL Hosts Cluster Meeting

The Division of Geology and Land Survey hosted the Association of American State Geologists Central States Cluster meeting. The discussion focused on new and ongoing projects for each state and ways that staff learn or benefit from the experiences of a neighboring geological survey.

Topics ranged from geologic hazards, mineral and energy resources, geologic maps, earthquakes, oil and gas production, core sample storage, STATEMAP, source water protection, water supply and rights, ethanol plants, to Web site design and maintenance.

The group toured the division's Ed Clark Museum of Missouri Geology and heard a presentation by state geologist and division director Mimi Garstang about the December 2005 Taum Sauk Reservoir failure.

Cheryl Seeger, a Department of Natural Resources geologist from Rolla, led a discussion about the incredible geologic history of Missouri that was



environmental notes

Let There be (a Little Less) Light ...

To paraphrase a well known text, it has been written: "Let there be light. And there was light and it was good. ... " But in today's skies, how much light is too much?

The National Park Trust at [www.parktrust.org/parklandnews/articles/DarkNightSkies.htm] says: "The proliferation of poor quality outdoor lighting is the principle threat to the nighttime scene. Urban sky glow can travel over 200 miles, affecting remote wilderness and parks. Moderate amounts of light pollution can cut the number of visible stars in half or more, while skies within a few miles of cities will be decimated. Not only can one's backcountry camping experience be tainted, but also nocturnal wildlife suffers ill effects to varying degrees. The problem is far from intractable, however, with modern lighting designs that produce very little scattered light [becoming] increasingly available. High-quality lighting improves security, reduces energy consumption and is often less expensive. Some communities have chosen to upgrade their lights, instantly improving the night sky and reaping these other benefits."

Kansas City and Columbia are both working toward night-friendlier lighting ordinances, according to Robert Wagner at [www.trianglealumni.org/mcrol/]. Currently, Missouri does not regulate nighttime lighting.

Brightly lit shopping malls and the glare of urban sprawl are obscuring the nighttime view. In fact, 99 percent of U.S. residents live in areas tainted by excessive outdoor lighting, known as light pollution, according to the National Aeronautics and Space Administration. The Milky Way is visible only in increasingly remote regions, astronomers say. But a growing number of city and state governments are taking up the fight to reclaim the night. For lawmakers, the issue is about energy efficiency and safety, as well as good stargazing. Various regulations aimed at reducing light pollution have been introduced in 32 states in the past decade.

Too much light at night can affect the life rhythms of most animals and some studies have linked it to cancers in humans who work night shifts. It also has been estimated that more than four million migrating birds are confused and killed in collisions with lighted communications towers in the United States each year.

As part of the recovery of the Johnson's Shut-Ins State Park, the "promotion of sustainability" plan under consideration would include the use of alternative light sources to reduce light pollution within the park. Some western states, such as New Mexico, are working to preserve dark sky areas for star seekers and photographers. For more information, check [www.darksky.org/index.html].

revealed as the dam failed and water scoured the side of Proffit Mountain.

"It has been a number years since Rolla has had an opportunity to host a meeting for other state geological surveys in the central region. It was truly our pleasure," said Garstang. "We have much in common and it is always helpful to share information."

Central region members who attended include: Bekki White, director and state geologist, Arkansas Geological Commission; Scott Ausbrooks, geologist, Arkansas Geological Commission; Vince Matthews, director and state geologist, Colorado; Bob Libra, state geologist, Iowa; Bill Harrison, director and state geologist, Kansas; Rex Buchanan, associate director for public outreach, Kansas; Harvey Thorleifson, director, Minnesota Geological Survey; Mark Kuzila, director, Nebraska Conservation and Survey; Charles Mankin, director and state geologist, Oklahoma; and Eric Potter, associate director, Texas Bureau of Economic Geology.

Governor Honors MoDNR Employees

Gov. Matt Blunt has honored Department of Natural Resources Department of Health and Senior Services and Department of Conservation staff with the 2006 Governor's Award for Quality and Productivity. The award recognizes ongoing efforts to improve state government.

This is the 18th annual award recognizing state government teams' collective effort to continuously increase quality and productivity. "The honorees are a sample of the tremendous quality and dedication Missouri state government employees exemplify," Blunt said. "I commend them and all state employees who work every day to serve Missourians, make the most for every tax dollar and eliminate waste."

The Department of Natural Resources, in coordination with the U.S. Environmental Protection Agency and the U.S. Department of Energy, worked



to clean up the Department of Energy's Weldon Spring site in St. Charles County. Contamination of this 17,000-acre site included hazardous and radioactive materials from a World War II explosives manufacturing plant and later a uranium processing facility. The site had pits filled with contaminated water, buildings that were used for processing TNT and uranium, and soil that contained hazardous materials.

Cooperation among these, other agencies and local groups has

spanned more than three decades. The initial challenge was how to dispose of contaminated material left on-site. Rather than shipping the material, which included buildings, equipment, and soil, the decision was made to entomb the materials in an on-site disposal cell. Completed in 2001, the 45-acre, 75-foot high disposal cell contains 1.5 million cubic yards of waste that will need monitoring for generations to come. However, what could have been merely a safe repository for hazardous

and radioactive waste is now a new educational and recreational attraction.

This revitalized area now serves the community in a new way. An on-site interpretive center shows the history, cleanup and current status of site monitoring. Native prairies have been re-established and the Hamburg hike-and-bike trail was opened this year. This area now provides an opportunity to learn about history and enjoy nature.

Help for Water and Wastewater Systems

The Missouri Department of Natural Resources has developed several tools

to assist water and wastewater system operators through the process of enacting appropriate ordinances and establishing adequate and proportional user rates.

The department developed the model ordinances and corresponding rate setting tools around the requirements for the State Revolving Fund Leveraged Loan Program and other grant and loan programs administered by the department's Financial Assistance Center. The department has posted these model ordinances and rate setting tools on its Web site at [www.dnr.mo.gov/env/wpp/srf/srf-app_guid.htm].

Currently, the department has developed Drinking Water Use, Drinking Water User Charge, Sewer Use and Sewer User Charge model ordinances. In addition, companion rate setting tools are also available for the water and sewer user charge ordinances. These rate-setting tools are Excel-based workbooks that can be easily modified to fit the specific needs of most water and wastewater systems.

User charge and use ordinances are crucial in establishing and maintaining viable water and wastewater systems. The Water Use and Sewer Use ordinances define the requirements associat-

I was reading the fall edition regarding camping in Missouri state parks. The Mo-Jac Trailer Club originated in 1963. We were truly dedicated campers and part of the original six members.

The club still exists today. Our most recent trip was to Babler State Park. Only four trailers are left but we still have 17 members. We still join the "trailerites" for the day and meeting. Meetings were always the third weekend from March through October. We covered the state, including Trail of Tears, Montauk, Wakonda, Arrow Rock; Washington State Park was our favorite for October.

Every couple took turns being elected officers or wagon master during the year. Those were great memories, our youngest was four months old.

In our history book, we can account for all of our trips and still have the camping agendas.

Cay Gendon
St. Ann

On behalf of the City of Marshfield, I wish to thank your magazine for the very complimentary article about Marshfield in your fall issue.

The City of Marshfield – in cooperation with Rita Mueller of the Southwest Missouri Resource Conservation and Development Council and Dr. Robert Reed of the University of Missouri-Columbia – has worked very hard to plan for future growth. We received a great deal of support from the citizens and technical advisors that serve on our watershed committees. DNR has offered continual help to the City of Marshfield, and has proven itself to be a very valuable resource in planning for growth. We commend the many DNR employees that serve Missouri citizens so well, and we appreciate the department's leadership and willingness to share resources and knowledge.

Thank you to *Missouri Resources* – including Philip J. Tremblay and Scott Myers – for reporting on the partnership

between the city and DNR so accurately. We look forward to a continued partnership with DNR, and hope that other government entities look to this partnership as an example of positive progress involving many levels of government.

Dan McMillan
City Administrator, Marshfield

I would like to see the department study the effects of light pollution in Missouri. This is a problem that affects our state parks, environment and energy resources. Both Kansas City and Columbia are in the process of drafting city ordinances. I am working with the Kansas City group and have provided statements to the Columbia group.

Some national organizations and states have realized this is a problem and are starting to address light pollution in outdoor lighting. But a lack of knowledge and understanding of the problem limit full adoption of such policies. Perhaps the department can inform our residents and policy makers about light pollution, its causes and how it affects every Missourian. The result could be a basic understanding of good lighting principles.


Robert Wagner
Midwest Citizens for Responsible Outdoor Lighting
Kansas City

Editor's Note:

Although the Department of Natural Resources has no regulatory authority in which to address light pollution, it is a subject of interest to many Missourians. See Environmental Notes on page 15 of this issue for more information on the topic.

LETTERS



Letters intended for publication should be addressed to "Letters," *Missouri Resources*, P.O. Box 176, Jefferson City, MO 65102-0176 or faxed to (573) 522-6262, attention: "Letters." Please include your name, address and daytime phone number. Space may require us to edit your letter. You also can e-mail *Missouri Resources* staff at moresdnr@dnr.mo.gov 

ed with design, construction, connection to, and the use of the water or wastewater system. The User Charge ordinances contain the methodology used to establish the water or sewer rates necessary for a financially strong system.

The department's SRF Program provides low-interest loans to communities for wastewater and drinking water infrastructure projects. Since 1989, the SRF has provided more than \$1.54 billion to 300 Missouri communities for wastewater treatment and drinking water facilities. Towns and cities across the state have saved more than \$478 million dollars in interest charges. In addition, projects financed by the fund resulted in the creation of nearly 35,000 new jobs.

For more information on the model ordinances, rate setting tools or the SRF Program, call the Water Protection Program's Financial Assistance Center at 1-800-361-4827 or (573) 751-1192.

Parks Director on eFriends

A new feature, Find the Director, has been added to Missouri State Park eFriends, an electronic newsletter for people interested in Missouri state parks and historic sites. Each eFriends issue will include a photograph of a state park or historic site featuring Doug Eiken, the director of the Department of Natural Resources' Division of State Parks. There also will be clues to where the photo was taken. Participants can try to "find the director" and guess the identity of the park or site to qualify for a prize.

Each entry should include name, address, phone number and e-mail address and be submitted by the last Friday of each month. Each correct entry will be entered into a monthly drawing to win a prize, such as a certificate for two free nights of camping in any Missouri state park or historic site campground or other prizes. Winners will be notified and announced the following month on the Web site, which will include the answer to the mystery park or site.



When the mystery site is announced, the Web site will include some insight from the division director on his visit to the park or site along with some perspective about the state park system. When participants submit an entry, they are invited to give their impressions and comments about the park or site, or the state park system in general.

The new feature is a fun and interesting way to interact with the division director and learn more about Missouri's state park system. To sign up for the Missouri State Park eFriends and receive regular e-mail updates on the state park system, send an e-mail to [moparks@dnr.mo.gov].



Ombudsmen Busy During First Year

In their first year, the seven Missouri Department of Natural Resources' ombudsmen have contacted 2,145 citizens, community leaders and business owners.

"When I established the Ombudsman Program in September 2005, I envisioned it as an opportunity to help to strengthen Missouri's communities while also addressing head-on many of the negative myths and rumors that existed about the department. I'm pleased to say that in its first year, this program has far exceeded my expectations," said Natural Resources Director Doyle Childers.

The ombudsmen inform the regional directors and the department director of issues, concerns and problems they learn of while meeting with area clients of the department.

"The ombudsmen and I also have conducted town meetings across Missouri to answer questions and gain input from citizens, business leaders and city officials. So far, we've held 73 town meetings and met with more than 1,000 citizens," Childers said.

Through their contacts, department ombudsmen provide support to communities working to make improvements to ailing infrastructure systems, to business owners seeking assistance in meeting

environmental standards, to citizens trying to address problems in their communities and a range of other issues.

"Our work is about helping people address their needs and to meet the dreams they have for their businesses and communities," said Scott Totten, chief of the Ombudsman Program. "In the process, we hope to build lasting relationships with citizens."

"When I hear success stories from our ombudsmen, they often mention that these accomplishments would not be possible without the support and follow-through by staff in other parts of the agency. I often hear about the high degree of professionalism and expertise found throughout the department," Childers said.

More information on the ombudsman program is available at [www.dnr.mo.gov/magazine/2006-fall.pdf].



Popular Scrap Tire Roundup is Back

For Missouri property owners who have between 500 and 10,000 scrap tires

on their property and want to properly dispose of them, the Missouri Department of Natural Resources is offering an opportunity to have those tires removed free of charge.

The Tire Dump Roundup program is providing all Missouri property owners the opportunity to report illegal scrap tire dumps on their property and help remove them from the environment.

To qualify, the scrap tire dump must contain between 500 and 10,000 tires and the owner must sign a property access agreement that states if a property owner violates the solid waste management law in the future, the department can assess penalties and cost recovery for those incidents.

Active businesses and property owners who have participated in prior cleanup initiatives are not eligible.

The Tire Dump Roundup is funded from the state's 50-cent-per-tire scrap tire fee collected by retailers when every new tire is purchased in Missouri.

TIME EXPOSURES

Send your photo to "Time Exposures," c/o Missouri Resources, P.O. Box 176, Jefferson City, MO 65102-0176. All pictures will be returned via insured mail. Pre-1970 environmental and natural resource photos from Missouri will be considered. Please try to include the date and location of the picture, a brief description and any related historic details that might be of interest to our readers.



Photo by Bob Hentges

Before it became an expensive subdivision west of Binder Lake, near Jefferson City, Matt Distler's farm was the site of this 1960 wheat threshing activity. The harvest would provide feed for the farm's horses, cows, hogs and chickens. The draft horses that brought the far wagon to the scene were reportedly tied up in the shade before the threshing machine was started.

The family crew, from left, included Paul Viet, Joe Brauner, Leroy Hentges, Matt Distler, Judge Fred Distler and Walter Brauner. "Sooner" – sooner sleep than eat – is the dog under the wagon. Viet and the Brauner brothers married into the Distler family. Hentges, the photographer's father, turned 90 in November 2006. Matt is shown running the pipe that stacked the straw. Fred, on the tractor, served several years as presiding commissioner of Cole County. Other family and neighbors gathered wheat shocks as the threshing continued.

"After the work, the womenfolk would serve a full-course meal prepared on the wood stove, fresh bread, homemade pie, honey, fresh butter and jelly, all washed down with sweet tea dipped from a large washtub sitting under a shade tree with a block of ice floating in it," recalls the photographer, then 19-year-old Bob Hentges.

Transportation to promote the use of scrap tires in asphalt for roadways.

For more information on Missouri's scrap tire fee efforts, visit the department's Web page at [www.dnr.mo.gov/env/swmp], or contact the department's scrap tire unit at 1-800-361-4827 or (573) 526-3909.



State Funds Sewer, Water Improvements

Gov. Matt Blunt has announced that 10 Missouri communities

and two public water districts have received \$85.2 million in low-interest loans to construct and improve water and wastewater treatment facilities.

Working through the Missouri Department of Natural Resources' State Revolving Fund, communities will receive loans with an average interest rate of 1.37 percent. Loan recipients are Arnold, Herculaneum, Indian Point, Jefferson City, Kirksville, Liberty, Newburg, Osage Beach, Russellville, Wentzville, Clarence Cannon Wholesale Water Commission serving Monroe County and the surrounding area, and Tri-County Water Authority serving Jackson, Bates and Cass counties.

"The State Revolving Fund has financed \$1.54 billion for construction statewide and saved Missouri communities more than \$478 million in interest," said Department of Natural Resources Director Doyle Childers.

The SRF is a perpetual loan program operated by the Department of Natural Resources in cooperation with the State Environmental Improvement and Energy Resources Authority that provides subsidized, low-interest loans to communities and public water and sewer districts statewide to construct water and wastewater treatment facilities. Federal funds through the U.S. Environmental Protection Agency are used to secure bonds issued by the EIERA. The water and sewer bonds provide \$143 in construction for every \$100 in federal funds at a significantly lower interest rate.

To date, more than 14 million tires across Missouri have been cleaned up with the funds from this fee. The department will continue to work with Solid Waste Districts and not-for-profit citizens groups in cleaning up dumps that contain less than 500 tires.

Insects and rodents that grow and breed in these dumps can transmit diseases, such as the West Nile Virus.

Fires at tire dumps can release hazardous substances into the air, land and water, and can burn for months.

When recycled properly, scrap tires can be made into other products or burned for fuel. In 2004 and 2005, more than 8 million tires were used as tire-derived-fuel in power plants.

The department is also working with the Missouri Department of

Watkins Mill Volunteers Keeping History Alive

It takes work to maintain and operate a farm. To interpret and present the 1,442-acre Bethany Plantation, now known as the Watkins Woolen Mill State Park and State Historic Site, it also takes volunteers – really good volunteers.

In June 2006, 67 volunteers and Matt Carletti, volunteer coordinator and administrator for the historic site, were presented the Victor E. Speas Foundation Award for outstanding corporate/public volunteer program from the Volunteer Coordinators' Council of Greater Kansas City. The VCC brings together area volunteer managers and others interested in volunteerism for mutual support, exchange of ideas and information and educational programs of interest to its membership.



DNR file photo

Watkins Mill Volunteers

To present life on an 1870s plantation and operating woolen mill, the Watkins Mill volunteers dedicated 2,208 hours of their time in 2005 to repair equipment, craft period tools, maintain the grounds and garden, repair and create period clothing, give tours and maintain nearly 1,000 items in the site's archives to present an authentic reenactment for 13,000 visitors each summer.

The park and historic site is located northeast of Kansas City, in Clay County, eight miles east of I-35. The adjacent wooded hill-sides and pastures of the Watkins farm now provide scenic recreation such as camping and picnicking. A 100-acre lake offers fishing, swimming and boating as well as a paved bicycle path that circles the lake.

As a local legacy, the restoration began with the purchase of the mill by three men who formed the nonprofit Watkins Mill Association. With continued support from this association, the home and holdings of Waltus Lockett Watkins have been restored, along with outbuildings, the woolen factory and gristmill and a nearby church and unusual octagonal schoolhouse. The mill is now the only 19th century American woolen mill with its original machinery still intact.

"With limited staff and limited funds, volunteers are a necessity at the site," said Carletti. "They help state park staff in all aspects of the site's operation and in turn receive a chance to use their abilities and talents to positively influence the community."

The Watkins Mill Volunteer Program recruits through a prominent volunteer display at the site's visitor center, a link on the site's Web page and through a partnership with the Heart of America United Way. Volunteers are selected for special training in particular skills. Further evaluations and a program rating system also are employed.

In March 2006, the Watkins Mill Association sponsored the 14th annual appreciation dinner for volunteers awarding certificates and gifts based on the time and expertise they volunteered.

"Without volunteers in the beginning, our historic site would never have come into existence," said Carletti.

Dan Leyland Clear Water Specialist

Dan Leyland, an environmental specialist III at the Southwest Regional Office, Field Services Division, was selected as the Missouri Department of Natural Resources' January 2006 Employee of the Month. Soon, he also was named to receive the March 2006 State Employee of the Month award.



DNR file photo

Dan Leyland

Leyland was nominated by Craig Reichert and Tina White, also of the regional office in Springfield, for his independent efforts to create a storm water pollution control system at the Shepherd of the Hills Fish Hatchery.

The hatchery's parking lot previously dumped runoff water directly into the trophy trout area of Lake Taneycomo. The sand filter system used now is capable of removing 75 to 80 percent of pollutants from surface runoff and helps protect the lake's water quality.

The lake provides drinking water for thousands of people, supports trout stream habitat, serves area wastewater plants and provides scenic value in a highly visited part of Missouri. Leyland says protecting Taneycomo's water clarity is critical.

"Leyland's hard work and the amount of initiative he put into this project shows his dedication to the mission of the department," said Reichert. "Since the early 1990s, he has been a key player in the Branson area land development boom, most recently in the controversial Branson Landing development. He could retire anytime, but he continues to work at protecting the environment," the nominating team said. "He has volunteered his free time on weekends and evenings to work on ... projects beneficial to our area."

Leyland is described as having considerable knowledge of the environmental regulatory process, methods of investigation and the analysis and techniques needed to maintain environmental controls. He spends a vast amount of time mentoring and providing on-the-job training to new employees.

"I try to help people get into compliance with environmental regulations," Leyland said. "I know I have to do my best to give businesses an opportunity to succeed while protecting the environment." He commended the businesses and state agencies involved with the Branson Landing project. "They have worked cooperatively and even beyond regulation expectations," Leyland added.

Leyland graduated from the College of the Ozarks, Point Lookout, with a degree in biology. He first worked as a commercial fisherman before joining the agency's Poplar Bluff regional office in 1976.

Leyland lives north of Sparta, in Christian County, with his wife Phyllis. He has two children, also living in Sparta, and three grandchildren – all girls. His hobbies include reading, swimming and raising a calf or two each year. Leyland has worked for the department for more than 29 years.

"I try my best, like everyone else in the department, to help the folks we visit in the field to understand what our job is. I'm proud to work for the citizens of Missouri," Leyland said.

Bennett Spring State Park

Trout Fishing Just Part of the Fun

by Diane Tucker

photographs by Scott Myers

Dallas &
Laclede
Counties



“ I’ve been coming down here for years!” This is a familiar phrase heard often at one of Missouri’s premier trout fishing parks, Bennett Spring State Park. Established in 1924 as one of Missouri’s earliest state parks, the park receives an annual visitation of more than 800,000. Many of these visitors come to fish trout from the park’s namesake, Bennett Spring, which provides the park’s spring branch with an average of more than 100 million gallons of water each day.





It wasn't always trout fishing that drew people to the area. For centuries, early travelers wandered through the area looking for shelter. American Indians canoed the network of rivers throughout the Ozarks and came to the spring, leaving behind numerous artifacts in nearby floodplains and shelter caves, some dating as early as 7000 BC.

In 1837, James Brice brought his family to the area to homestead. He constructed the first of five mills built between 1837 and 1900. Local farmers came to use the mill and drink water from what became known as Brice's spring. More families moved into the region and a settlement called Brice was formed around the mill. Shortly before the Civil War, Brice's younger daughter Anna married Peter Bennett, who took over operation of the mill.

Later, their son, W.S. Bennett, managed what was then called Bennett's Mill. After the mill burned in 1895, W.S. Bennett became a minister and a private enterprise leased the millstream. The last mill was built in 1900, and a series of different millers operated the mill. Despite this, the town was still called Brice and the area around it was referred to as Bennett Spring.

At its economic peak in the early 1900s, the town of Brice had the three-story mill, two general stores, a hardware store, a blacksmith shop and an inn. Farmers lined up to have their grain milled, often waiting for several days. Their families camped and passed the time by swimming in the river or fishing in the stream. In 1917, the Bennett Spring Church of God was organized and

constructed on an acre of land donated by W.S. Bennett. Unfortunately, the town of Brice fell into disrepair and much of it was removed during the Great Depression. Today the only structure remaining from the town is the church.

Several changes occurred from the late 1890s through early 1900s to change Brice from quiet hamlet to tourist's haven. Sportsmen from all over the state enjoyed the Ozarks for hunting, fishing and vacationing with their families. Sporting clubs encouraged the federal fish hatchery in Neosho to stock Bennett Spring with rainbow trout. The increase in fishing interest prompted construction of the Bennett Spring fish hatchery. Arlie Bramwell, great-grandson of James Brice, was hired to oversee the hatchery. Bramwell utilized the millrace as hatchery pools and the mill to grind food for the trout.

In 1924 and 1925, the Missouri State Park system purchased 573 acres of land, including Bennett Spring and the hatchery. Arlie Bramwell continued to operate the hatchery and was appointed the park's first superintendent. The young park grew in popularity and by 1935 had a visitation of more than 530,000, comprising a tenth of Missouri's visitors to state parks and federal lands.

It was not until the mid-1930s, however, that improvements to the park were made. The Civilian Conservation Corps (CCC) built roads, a new dam for the hatchery and many of the enduring structures people see and enjoy today. These include the small gauge station and shelter house at the

(Opposite page) Trout fishing brings many visitors to Bennett Spring State Park. Here a fisherman prepares his tackle below the spillway while others work the pool above the dam.

(Above) The gauge station and one of the park's cabins display the craftsmanship that the Civilian Conservation Corps brought to the park in the mid-1930s.



The stone bridge at Bennett Spring State Park is one of many rustic features located in the park and built by the Civilian Conservation Corps. It provides a classic backdrop to trout fishermen working the stream and carries visitors to the nearby CCC-decorated dining lodge.

spring, several cabins, the dining lodge and the stone bridge over the stream branch. The CCC's excellent craftsmanship is especially exhibited in the dining lodge with its beamed ceilings, stone fireplaces and iron chandeliers designed with fish motifs.

During the last 82 years, Bennett Spring State Park has grown in size to 3,216 acres and is managed by the Missouri Department of Natural Resources, while the Missouri Department of Conservation operates the hatchery. Trout fishing remains the most popular recreation activity. The regular fishing season is from March 1 through Oct. 31. Daily permits are required to fish on the spring branch and zones have been set aside for various types of lures. Special fishing events include Kids' Free Fishing Day in May and the Holland Derby in October. During the winter, a catch-and-release season requires a special permit.

In addition to trout fishing, there are many other reasons for visiting Bennett Spring State Park. Have a picnic lunch at one of the streamside tables or reserve a picnic shelter for group gatherings, family reunions or wedding receptions. Watch children play at one of several playgrounds in the day use area, relax on a park bench to view fishing activities, or feed the trout while visiting the fish hatchery. Visit the nature center and view exhibits that interpret Missouri Ozark springs and highlight the history and natural environment of Bennett Spring. Guided nature walks and a variety of other presentations are all offered free from April through October.

Take a hike of your own on the 12 miles of hiking trails that wind through the park. Enjoy scenic views of the spring and spring branch as well as dolomite bluffs, glades and small Ozark streams. There are hardwood forests of oak and hickory with an understory of maple, dogwood, and serviceberry trees. An abundant variety of wildflowers provide a contrasting array of colors throughout the seasons. Walk along the spring branch to view muskrats, great blue heron and mink along the way. Take longer hikes into the Ozark backcountry to catch glimpses of deer, turkey and other wildlife that call the park home. Follow the Natural Tunnel Trail along Spring Hollow to the Bennett Spring Natural Tunnel, an intact segment of a collapsed cave that is 15 feet high, 50 feet wide and 100 yards long.

Overnight accommodations vary from cabins with fireplaces to motels or duplexes. Comfortable condos offer the conveniences of home with fully equipped kitchens, heating, air conditioning and cable TV. Grills and picnic tables are also available outside the lodging facilities. If you want to leave the cooking to someone else, head to the dining lodge. Home-style meals and weekend buffets make it a perfect place for family reunions, business meetings or just a quiet meal.

If you prefer camping, Bennett Spring State Park has five campgrounds that contain a total of 239 basic, electric and sewer/electric/water campsites. Amenities include a sanitation station, modern restrooms, showers, water and coin-operated laundries. Many sites are reservable in

advance by calling 1-877-ICampMo or online at [www.mostateparks.com].

Stop by the park store for groceries and fishing supplies. Canoe and fishing tackle rental, angling lessons and guide services are also available. During summer months, visitors can cool off in the modern public swimming pool or plan a daylong float trip on the nearby Niangua River. The motel, cabins, dining lodge, park store, swimming pool and canoe rental are operated by concession hosts, Jim and Carmen Rogers. For more information, call the park store at (417) 532-4307 or visit their Web site at [www.bennettspringstatepark.com].

Visit Bennett Spring State Park during Hillbilly Days, one of the state park system's oldest special events. Planned in conjunction with the Lebanon Chamber of Commerce on Father's Day weekend in June, Hillbilly Days is a festival of music, crafts and foods celebrating the traditions of the Ozarks.

It doesn't take much to fall in love with Bennett Spring State Park. Bring your family and come back often. In no time you'll also proudly say, "I've been coming down for years!"

For more information about Bennett Spring State Park, contact the park at (417) 532-4338, the Missouri Department of Natural Resources toll free at 1-800-334-6946 (voice) or 1-800-379-2419 (Telecommunications Device for the Deaf) or visit the Web at [www.mostateparks.com].

Diane Tucker is the interpretive resource specialist at Bennett Spring State Park.



Career Connection

Love of Outdoors Spurred Plan to be a Planner

by Jennifer Sieg

Photographs by Scott Myers

When asking kindergartners what they want to be when they grow up, it is doubtful that any of them would jump up and say, “I want to be a planner.” However, childhood interests often influence career choices. Growing up in the country and family camping trips gave Mary Donze an early love and appreciation for the outdoors – so much so that she got a degree in recreation and park administration. This resulted in her landing a job as a planner 23 years ago with the Department of Natural Resources’ Division of State Parks – something she probably didn’t “plan” on as a child.

So, what exactly does a planner do? As a park planner, Donze initiates a conceptual development plan (the long-range plan for an individual state park or historic site) review. This review looks at problem areas, new recreation possibilities or needs, and anticipates trends. Her primary responsibility is to facilitate a team through a series of meetings with staff and the public to formulate these long-range plans. “The nature of my work is definitely team oriented. Each plan is only as good as the process and only as good as the team put together to go through the process,” said Donze.

Mary Donze looks over plans for repairing the boardwalk at Johnson’s Shut-Ins State Park with, from left, Frank St. Clair, Division of State Parks, Jon Hart, MacTec park planning consultant and Mark Hohen-gasser, State Parks.



Checking boardwalk repair plans on-site are, from left, Ron Huffman, MacTec consultant, Mark Hohengasser, State Parks and Jon Hart, MacTec. On the bridge are Mary Donze, Parks planner and Kim Burfield, Johnson's Shut-Ins State Park superintendent.



A typical workday may consist of meeting with a landowner adjacent to a park, talking to a park superintendent about a new use area in a park, presenting a program to a local trail organization or facilitating a public meeting.

"I enjoy the mix of being outside and inside and the variety in my job. Every project is different." Recently, Donze has been heavily involved with the recovery plan for Johnson's Shut-Ins State Park.

Gathering public input on state park and historic site plans is essential to the process. Therefore, the ability to communicate with diverse groups of people, including the general public and colleagues, is essential. Donze points out that "Patience and listening skills are vital. When you are in a facilitator's role at a public meeting, sometimes you have to step away from your personal opinion and just listen to other people. Park visitors are passionate about their favorite parks and often have strong opinions about how they should be operated."

Being involved with strategic planning, Donze gets a broad picture of what is going on within the division. "The Division of State Parks is a cool thing to be involved with. I'm very proud to be a part of the division's long, successful history of finding the balance between protecting natural and cultural resources and allowing and accommodating public use for recreation," she said.

The Department of Natural Resources offers numerous planner positions throughout its various divisions, each with a unique list of job duties. General qualifications for an entry-level planner position include a bachelor's degree and one year of professional or technical experience in research and analysis, program or policy development, or management analysis, grant management, budget or fiscal analysis or a closely related area. There are four levels of planner positions, each requiring an additional year of experience in the above areas.

For more information, call the department at 1-800-361-4827 and ask for the Human Resources Program.

Jennifer Sieg is a public information specialist with the department's Division of State Parks.

Environmental Assistance Visits

EAVs Head Off Big Problems

by Kerry Cordray
photograph by Scott Myers

A wry old joke lists among the frightening phrases in the English language, "We're from the government, and we're here to help." But it's no joke that hundreds of applicants for new environmental permits in Missouri last year found themselves seriously helped by just such an offer. Since early 2006, the department has offered a series of voluntary and informal Environmental Assistance Visits to facilities receiving new permits. As of late 2006, nearly 700 assistance visits were conducted.

New tools like the EAV are fundamental to department efforts to improve local services. "Helping communities and facilities understand and meet environmental regulations is key to a cleaner environment for all of us," said Jim Macy, director of the department's Field Services Division. "If problems are discovered during an EAV, the facility is expected to make corrections. Many visits find issues requiring attention, but only a very few facilities have had violations serious enough to require immediate corrective or enforcement action by the department. We think compliance assistance is the job of everyone in the department," Macy added.

The value of this new approach is proved somewhere in Missouri nearly every day. One real-life story makes a good example. In May 2006, Lawrence Fabric Structures, a manufacturer of awnings, overhangs and canopies in



Employees of Lawrence Fabric Structures, Kirkwood, work on a very large curtain. Department staff from the St. Louis Regional Office recently conducted an Environmental Assistance Visit there to advise the company on the proper handling of hazardous wastes involved in paint booth filters and solvent rags.

Kirkwood, accepted the offer of a scheduled assistance visit from the department's St. Louis Regional Office. The region focuses on providing EAVs, especially to newly registered generators of hazardous waste.

Environmental specialist Joe Trunko visited the company, observing manufacturing processes. He noted ways the company could enhance emergency preparedness procedures, and gave guidance on disposal of paint booth filters and solvent contaminated rags. "It's tremendously important to us to keep things as safe as possible for our workers," said Matt Roslawski, the company's materials manager. "We felt great about the professional walk-through we received. It helped us identify several

new issues to go with our permit." Trunko pointed out ways the company could better meet requirements for container management and labeling. "The issues we identified, like most we see in these visits, were fairly 'minor,'" said Trunko. "The things we see most often are needs for more careful paperwork, or better labeling and dating of containers. But when dealing with hazardous waste management, fixing even a 'minor' problem in hazardous waste can have major and lasting positive effects on the safety of workers and ultimately, the surrounding community."

Kerry Cordray is division information officer for the department's Field Services Division.



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